REMARKS

Claims 1-22 and 24-32 are pending. By this amendment, claim 28 has been canceled and claim 1 has been amended. In the Office Action dated May 15, 2007, the Examiner took the following action: (1) rejected claims 1 and 28 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,875,329 to Washizu et al. ("Washizu"); (2) rejected claims 1-4, 6-9, 17-22, 25-27, 29 and 31-32 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,824,664 to Austin et al. ("Austin"); (3) rejected claim 5 under 35 U.S.C. § 103(a) as being unpatentable over Austin as applied to claims 1-4, 6-9, 17-22, 25-27, 29 and 31-32 above, and further in view of U.S. Patent No. 6,368,871 to Christel et al. ("Christel"); (4) rejected claims 10-16 and 24 under 35 U.S.C. § 103(a) as being unpatentable over Austin as applied to claims 1-4, 6-9, 17-22, 25-27, 29 and 31-32 above, and further in view of U.S. Patent No. 6,881,315 to Iida et al. ("Iida"); (5) rejected claims 28 and 30 under 35 U.S.C. § 103(a) as being unpatentable over Austin as applied to claims 1-4, 6-9, 17-22, 25-27, 29 and 31-32 above, and further in view of Washizu; and (6) rejected claims 1-6, 17 and 18 on the grounds of obviousness-type double patenting as being unpatentable over claims 1, 6, 7, 8, 10 and 11 of co-pending Application No. 10/760,139.

The embodiments disclosed in the present application will now be discussed in comparison to the cited references. Of course, the discussion of the disclosed embodiments, and the discussion of the differences between the disclosed embodiments and the cited references, does not define the scope or interpretation of any of the claims. Instead, such discussed differences merely help the Examiner appreciate important claim distinctions discussed thereafter.

The present application is directed toward a device and method for manipulating particles using dielectrophoresis. In one embodiment, fluid containing particles is passed over an insulating positive ridge. The insulating ridge allows the fluid to pass over the top of the ridge and along the sides of the ridge. The ridge locally modifies the electric field to drive dielectrophoresis. In particular, the particles are constrained through dielectrophoresis near the insulating ridge by the electric field across the insulating ridge. The ridge generates non-uniformities in the applied electric field that constrain particle motion.

The Examiner cited the Washizu et al. reference. The Washizu et al. reference discloses a system that relies on electrode geometries to generate the non-uniform electric field

for dielectrophoresis. The electrodes require a hollow space to generate dielectrophoresis forces in the device. The hollow space is a valley and not a positive ridge. The system in the Washizu et al. reference does not disclose or fairly suggest a positive ridge.

The Examiner cited the Austin et al. reference. The Austin et al. reference discloses a device for manipulation of polarized particles comprising a microchip containing dielectric constrictions 12 for dielectrophoresis. The dielectric constrictions 12 are not ridges that allow fluid *to pass over them*. Rather, the dielectric constrictions are posts that allow fluid to pass *between them*. (Emphasis Added). In particular, the Austin et al. reference indicates that the dielectric constrictions 12 are formed by etching the substrate 14. Column 11, lines 36-67. Therefore the constrictions 12 are a part of the substrate 14. In addition, a cover 20 is sealed to substrate 14 and the cover may be sealed to substrate 14 with layer 21. See Figure 1B and column 7, lines 54-59. Figure 1B shows that the dielectric constriction 12 is sealed to the layer 21, and thus does not allow fluid to pass over it. Therefore, the dielectric constrictions are posts that are formed in the substrate and sealed to the cover, and thus cannot allow fluid to pass over them. This is further suggested by Figure 1D, which illustrates a schematic diagram of the effect of the dielectric constrictions 12 on dielectric electric field 26. As you can see from the figure, only the gap between the constrictions is shown to effect the dielectric electric field 26. The top surface of the constriction 12 does not effect the dielectric electric field 26. The Austin et al. reference does not disclose or fairly suggest that the constrictions 12 are formed to allow fluid to pass over them. The distinction between an architecture employing posts and ridges is important because the latter architecture, disclosed in this invention, confers significant performance improvements and design flexibility as described in the disclosure.

Turning now to the claims, the patentably distinct differences between the cited references and the claim language will be specifically pointed out. Claim 1 recites, in part, "an insulating positive ridge on the substrate positioned such that the sample fluid may pass over the positive ridge." Neither the Washizu et al. reference nor the Austin et al. reference discloses or fairly suggests the above limitation. Rather, the Washizu et al. reference discloses a hollow space between electrodes. In contrast, claim 1 requires a positive ridge. As alluded to above, the Austin et al. reference does not disclose or fairly suggest a ridge positioned such that the sample fluid may pass over the ridge. Rather, the Austin et al. reference discloses dielectric constrictions or posts that are formed in the substrate layer by an etch process and sealed to a

cover or top layer. The dielectric constrictions in the Austin el al. reference only allow fluid to pass between them. In contrast, claim 1 requires the ridge to be positioned so that the fluid may pass over the ridge. Therefore claim 1 is allowable over the Washizu et al. reference and the Austin et al. reference.

In addition, claim 19 recites, in part, "passing a sample fluid containing particles over the insulating ridge." As stated above the Austin et al. reference does not disclose or fairly suggest the above limitation. Because the constrictions are formed in the substrate and sealed to a cover, they do not allow fluid to pass over them. Therefore claim 19 is allowable over the Austin et al. reference.

Claims depending from claims 1 and 19 are also allowable due to depending from an allowable base claim and further in view of the additional limitations recited in the dependent claims.

All of the claims remaining in the application are now clearly allowable. Favorable consideration and a timely Notice of Allowance are earnestly solicited.

Respectfully submitted,

DORSEY & WHITNEY LLP

Karen Lenaburg
Registration No. 58,371
Telephone No. (206) 903-2399

KL:sp

Enclosures:
Postcard
Check
Fee Transmittal Sheet (+ copy)

DORSEY & WHITNEY LLP
1420 Fifth Avenue, Suite 3400
Seattle, Washington 98101-4010
(206) 903-8800 (telephone)
(206) 903-8820 (fax)

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